ABSTRACT

The present invention relates to a method for growing a robust, high-quality gate oxide layer on a silicon surface. The resultant gate oxide layer made according to the present invention can pass the standard 50K times 14V high-voltage stress testing. The preferred embodiment of this invention includes a step of preliminary low-pressure N_2O annealing that is carried out in an air-tight chamber at a temperature of less than 1000℃, a pressure below 0.2 torr, and N_2O flow rate of below 8000 sccm. The preliminary low-pressure N_2O annealing of the silicon surface is performed prior to the growth of high-quality gate oxide layer. In another preferred embodiment, N_2O may be replaced with NO.